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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,746	06/18/2001	Ivan Bella	37005-171895	8757

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EXAMINER	
BELL, MELTIN	

ART UNIT	PAPER NUMBER
2129	

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/881,746	BELLA ET AL.	
	Examiner	Art Unit	
	Meltin Bell	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-14 and 17-23* is/are pending in the application.

4a) Of the above claim(s) *6,15 and 16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-14 and 17-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is responsive to application **09/881,746** filed 06/18/2001 as well as the Amendment filed 4/13/05. Claims 1-5, 7-14 and 17-23 filed by the applicant have been entered and examined. Claims 6 and 15-16 are canceled. An action on the merits of claims 1-5, 7-14 and 17-23 appears below.

Priority

Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged for provisional application number 60/212,050 filed **6/16/00**.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-5, 7-14 and 17-23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language of the claims (e.g. "objects", "content", "blackboard", "experts") raise a question as to whether the claims are directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. For example, if claim 1 was amended to recite a computer-implemented

method and required performance of a result outside of a computer, it will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.

Claim Rejections - 35 USC § 103

Applicant's arguments have been fully considered, but are moot in view of new grounds of rejection. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Office presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Office to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-10, 12, 14, 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Amado* United States Patent Number (USPN) 5,701,400 "Method and apparatus for applying if-then-else rules to data sets in a relational data base and

generating from the results of application of said rules a database of diagnostics linked to said data sets to aid executive analysis of financial data" (December 23, 1997) in view of *Mikurak* USPN 6,671,818 "Problem isolation through translating and filtering events into a standard object format in a network based supply chain" (Filed Nov. 22, 1999) in view of *Lin et al* "Dempster-Shafer Reasoning for Medical Image Recognition" (November 1991) in view of *Ng et al* "Consensus in a multi-expert system" (January 1990) and in further view of *De Natale et al* "Interpretation of underwater scene data acquired by a 3-D acoustic camera" (23-26 March 1992).

Regarding claim 1:

Amado teaches,

- a blackboard (column 5, lines 7-31) comprising
- a plurality of experts (column 5, lines 32-57), and
- data comprising original input data and data created by processing of any of said plurality of experts (column 24, lines 14-23), and
- a controller operative to control said experts (column 77, lines 20-63);
- a relations subsystem (column 6, lines 60-67), coupled to said controller (column 25, lines 8-25)
- a model (column 10, lines 17-34; column 12, lines 47-54), coupled to said controller (column 25, lines 8-25; column 68, lines 20-38), comprising probabilities (column 13, lines 63-67; column 14, lines 1-8), wherein said model comprises a set of rules deduced from a learning system (column 21, lines 51-55), said learning system comprising truth (column 22, lines 25-28) data files (column 28, lines 18-54; column 54, lines 1-46) for

deducing probabilities (column 13, lines 63-67; column 14, lines 1-8), a learning system controller (column 8, lines 45-67; column 9, lines 1-4) and a statistics space controlled by said learning system controller (column 9, lines 21-32), wherein said set of rules describes how different classes recognized by said learning system are related to each other (column 17, lines 16-59)

However, *Amado* doesn't explicitly teach a belief model, coupled to said controller, comprising a set of beliefs and probabilities associated with each belief of said set of beliefs, wherein said belief model comprises a set of rules deduced from a learning system, said learning system comprising truth data files for deducing said set of beliefs, probabilities and shadow objects, a learning system controller and a statistics space controlled by said learning system controller, wherein said set of rules describes how different classes recognized by said learning system are related to each other spatially and physically or a belief network, coupled to said controller while *Mikurak* teaches,

- a controller (column 51, lines 13-20)

Lin et al teaches,

- a belief model, coupled to said controller (page 484, section 4.2), comprising a set of beliefs and probabilities associated with each belief of said set of beliefs (page 480, section 2, paragraph 2), wherein said belief model comprises a set of rules (page 481, section 3.3, paragraph 1), wherein said set of rules describes how different classes (page 486, Figs. 3-4) recognized are related to each other (page 482, section 4, paragraphs 1-2) spatially (page 483, section 4.1.3, Spatial relationship bullet) and physically (page 483, section 4.1.3, Initial Belief Assignment bullet; Figs. 1-2)

Ng et al teaches,

- a belief network, coupled to said controller (page 353, paragraph 3 and Fig. 1)

De Natale et al teaches,

- a system deducing (page II-487, right column, paragraphs 4—6; page II-488, left column, paragraph 1) shadow (page II-486, left column, paragraph 4) objects

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for providing a secure means for charging users based on information and/or resources actually used (*Mikurak*, column 205, lines 9-61), avoiding exhaustive enumeration of evidence combination (*Lin et al*, p. 484, section 6, paragraph 2), improving system performance (*Ng et al*, page 356, paragraph 4) and processing and interpretation of underwater images (*De Natale et al,* Abstract, "This paper presents ... maximum fuzzy reliability"). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Amado* as taught by *Mikurak, Lin et al, Ng et al* and *De Natale et al* for the purpose of providing a secure means for charging users based on information and/or resources actually used, avoiding exhaustive enumeration of evidence combination, improving system performance and processing/interpretation of underwater images.

Regarding claim 2:

The rejection of claim 2 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the references. Claim 2's limitations difference is taught in *Lin et al*:

- region identification experts and a closed curve recognizer (p. 482, section 4, paragraph 2)

Regarding claim 3:

The rejection of claim 3 is the same as that for claim 1 as recited above since the stated limitations of the claim are set forth in the references.

Regarding claim 4:

The rejection of claim 4 is the same as that for claim 1 as recited above since the stated limitations of the claim are set forth in the references.

Regarding claim 5:

The rejection of claim 5 is the same as that for claim 1 as recited above since the stated limitations of the claim are set forth in the references.

Regarding claim 7:

The rejection of claim 7 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the references. Claim 7's limitations difference is taught in *Lin et al*:

- said belief model is operative to predict existence of a shadow object in an image even if there are no specifc experts capable of recognizing said shadow object (p. 482, section 4.1, paragraph 1)

Regarding claim 8:

The rejection of claim 8 is the same as that for claim 1 as recited above since the stated limitations of the claim are set forth in the references.

Regarding claim 9:

The rejection of claim 9 is the same as that for claim 1 as recited above since the stated limitations of the claim are set forth in the references.

Regarding claim 10:

The rejection of claim 10 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the references. Claim 10's limitations difference is taught in *Lin et al*:

- said relations subsystem is operative to determine spatial relations (p. 483, section 4.1.3, Spatial relationship bullet)

Regarding claim 14:

The rejection of claim 14 is the same as that for claim 1 as recited above since the stated limitations of the claim are set forth in the references.

Regarding claim 18:

The rejection of claim 8 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the references. Claim 8's limitations difference is taught in *Ng et al*:

- a Bayesian Network (page 351, section 2, paragraph 2)

Regarding claim 19:

The rejection of claim 19 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the references. Claim 19's limitations difference is taught in *Amado:*

- rules operative to be used to make a determination whether or not one of said experts should be executed by search (column 86, lines 39-66) of said belief model to determine whether an adaptable threshold of supporting evidence (column 12, lines 47-54) has been exceeded for an execution supportability rule that evaluates outputs of currently executing experts

Regarding claim 20:

The rejection of claim 20 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the references. Claim 20's limitations difference is taught in *Lin et al*:

- said belief model is operative to model expected object associations (page 484, section 4.2), to weigh relative object positions (page 483, section 4.1.3, Initial Belief Assignment bullet; Figs. 1,6), and to tie a probability or belief value to those associations

Regarding claim 21:

The rejection of claim 21 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the references. Claim 21's limitations difference is taught in *Ng et al*:

- said belief network is operative to combine the belief model with hypotheses generated by said experts to form belief values for hypothesized objects (page 356, left column, paragraphs 2-3)

Regarding claim 22:

Amado teaches,

- identifying classes of objects (column 12, lines 16-29) specified by a user (column 12, lines 39-44) using a plurality of cooperative (column 10, lines 40-54) object recognition (column 16, lines 7-13) experts (column 77, lines 20-57);

- achieving (column 36, lines 60-67; column 37 lines 1-3) higher accuracy (column 17, lines 16-39) from using in parallel (column 8, lines 60-67; column 9, lines 1-4) said plurality of cooperative object recognition experts (column 5, lines 32-57) than is achievable using in serial said plurality of cooperative object recognition experts;

- supporting scaleability (column 12, lines 39-46) of performance (column 9, lines 21-32) including supporting multiple processors (Fig. 1);

- specifying specified associations (column 12, lines 16-29) among said objects,

- learning learned (column 12, lines 47-54) associations (column 13, lines 5-17) among said objects,

- representing said specified and learned associations (column 14, lines 19-22), and

- deducing a set of rules (column 2, lines 56-66) from a learning system (column 21, lines 51-55), said learning system comprising truth (column 22, lines 25-28) data files (column 28, lines 18-54; column 54, lines 1-46) for deducing probabilities (column 13, lines 63-67; column 14, lines 1-8), a statistics (column 9, lines 21-32) space (column 10, lines 4-10)

- a learning system controller (column 8, lines 45-67; column 9, lines 1-4) and a statistics space controlled by said learning system controller (column 9, lines 21-32)

However, *Amado* doesn't explicitly teach developing a belief model by deducing a set of rules from a learning system, said learning system comprising truth data files for

deducing beliefs, probabilities and shadow objects, a learning system controller and a statistics space controlled by said learning system controller, said set of rules describing how different classes recognized by said learning system are related to each other spatially and physically while *Mikurak* teaches,

- a controller (column 51, lines 13-20)

Lin et al teaches,

- developing a belief model (page 480, section 2, paragraph 2; page 480, section 1, paragraph 1), by deducing beliefs and rules (page 481, section 3.3, paragraph 1) describing how different classes (page 486, Figs. 3-4) recognized are related to each other (page 482, section 4, paragraph 2) spatially (page 483, section 4.1.3, Spatial relationship bullet) and physically (page 483, section 4.1.3, Initial Belief Assignment bullet; Figs. 1-2)

- deducing (page 481, section 3.3, paragraph 1) from a belief model (page 480, section 2, paragraph 2; page 480, section 1, paragraph 1)

Ng et al teaches,

- forming a belief network (page 353, paragraph 3 and Fig. 1) wherein said belief network is at least one of a Bayesian Network and a Dempster Shafer Network (page 356, paragraph 2); and

De Natale et al teaches,

- a system deducing (page II-487, right column, paragraphs 4—6; page II-488, left column, paragraph 1) shadow (page II-486, left column, paragraph 4) objects

Motivation – The portions of the claimed method would have been a highly desirable feature in this art for providing a secure means for charging users based on information and/or resources actually used (*Mikurak*, column 205, lines 9-61), avoiding exhaustive enumeration of evidence combination (*Lin et al*, p. 484, section 6, paragraph 2), improving system performance (*Ng et al*, page 356, paragraph 4) and processing and interpretation of underwater images (*De Natale et al,* Abstract, "This paper presents ... maximum fuzzy reliability"). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Amado* as taught by *Mikurak, Lin et al, Ng et al* and *De Natale et al* for the purpose of providing a secure means for charging users based on information and/or resources actually used, avoiding exhaustive enumeration of evidence combination, improving system performance and processing/interpretation of underwater images.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Amado* in view of *Mikurak* in view of *Lin et al* in view of *Ng et al* in view of *De Natale et al* and in further view of *Papadias et al* "Special issue on spatial database systems: Qualitative representation of spatial knowledge in two-dimensional space" (October 1994).

Regarding claim 11:

Amado teaches,

- a blackboard (column 5, lines 7-31) comprising

- a plurality of experts (column 5, lines 32-57), and

- data comprising original input data and data created by processing of any of said plurality of experts (column 24, lines 14-23), and

- a controller operative to control said experts (column 77, lines 20-63);

- a relations subsystem (column 6, lines 60-67), coupled to said controller (column 25, lines 8-25)

- a model (column 10, lines 17-34; column 12, lines 47-54), coupled to said controller (column 25, lines 8-25; column 68, lines 20-38), comprising probabilities (column 13, lines 63-67; column 14, lines 1-8), wherein said model comprises a set of rules deduced from a learning system (column 21, lines 51-55), said learning system comprising truth (column 22, lines 25-28) data files (column 28, lines 18-54; column 54, lines 1-46) for deducing probabilities (column 13. lines 63-67; column 14, lines 1-8), a learning system controller (column 8, lines 45-67; column 9, lines 1-4) and a statistics space controlled by said learning system controller (column 9, lines 21-32), wherein said set of rules describes how different classes recognized by said learning system are related to each other (column 17, lines 16-59)

However, *Amado* doesn't explicitly teach a belief model, coupled to said controller, comprising a set of beliefs and probabilities associated with each belief of said set of beliefs, wherein said belief model comprises a set of rules deduced from a learning system, said learning system comprising truth data files for deducing said set of beliefs, probabilities and shadow objects, a learning system controller and a statistics space controlled by said learning system controller, wherein said set of rules describes how different classes recognized by said learning system are related to each other spatially

and physically, a belief network, coupled to said controller or said spatial relations include types comprising at least one of: a north type, a south type, an east type, a west type, a contains type, a contained by type, and an adjacent to type while *Mikurak* teaches,

- a controller (column 51, lines 13-20)

Lin et al teaches,

- a belief model, coupled to said controller (page 484, section 4.2), comprising a set of beliefs and probabilities associated with each belief of said set of beliefs (page 480, section 2, paragraph 2), wherein said belief model comprises a set of rules (page 481, section 3.3, paragraph 1), wherein said set of rules describes how different classes (page 486, Figs. 3-4) recognized are related to each other (page 482, section 4, paragraphs 1-2) spatially (page 483, section 4.1.3, Spatial relationship bullet) and physically (page 483, section 4.1.3, Initial Belief Assignment bullet; Figs. 1-2)

- said relations subsystem is operative to determine spatial relations (p. 483, section 4.1.3, Spatial relationship bullet)

Ng et al teaches,

- a belief network, coupled to said controller (page 353, paragraph 3 and Fig. 1)

De Natale et al teaches,

- a system deducing (page II-487, right column, paragraphs 4—6; page II-488, left column, paragraph 1) shadow (page II-486, left column, paragraph 4) objects

Papadias et al teaches,

- said spatial relations include types comprising at least one of: a north type (page 480, paragraph 1; Figs. 7, 12, 14), a south type, an east type, a west type, a contains type, a contained by type, and an adjacent to type

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for providing a secure means for charging users based on information and/or resources actually used (*Mikurak*, column 205, lines 9-61), avoiding exhaustive enumeration of evidence combination (*Lin et al*, p. 484, section 6, paragraph 2), improving system performance (*Ng et al*, page 356, paragraph 4), processing and interpretation of underwater images (*De Natale et al,* Abstract, "This paper presents ... maximum fuzzy reliability") and dealing with extended objects (*Papadias et al*, page 499, paragraph 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Amado* as taught by *Mikurak*, *Lin et al, Ng et al, De Natale et al* and *Papadias et al* for the purpose of purpose of providing a secure means for charging users based on information and/or resources actually used, avoiding exhaustive enumeration of evidence combination, improving system performance, processing/interpretation of underwater images and dealing with extended objects.

Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Amado* in view of *Mikurak* in view of *Lin et al* in view of *Ng et al* in view of *De Natale et al* and in further view of *Wang et al* "Logical design for temporal databases with multiple granularities" (June 1997).

Regarding claim 12:

Amado teaches,

- a blackboard (column 5, lines 7-31) comprising

- a plurality of experts (column 5, lines 32-57), and

- data comprising original input data and data created by processing of any of said plurality of experts (column 24, lines 14-23), and

- a controller operative to control said experts (column 77, lines 20-63);

- a relations subsystem (column 6, lines 60-67), coupled to said controller (column 25, lines 8-25)

- a model (column 10, lines 17-34; column 12, lines 47-54), coupled to said controller (column 25, lines 8-25; column 68, lines 20-38), comprising probabilities (column 13, lines 63-67; column 14, lines 1-8), wherein said model comprises a set of rules deduced from a learning system (column 21, lines 51-55), said learning system comprising truth (column 22, lines 25-28) data files (column 28, lines 18-54; column 54, lines 1-46) for deducing probabilities (column 13, lines 63-67; column 14, lines 1-8), a learning system controller (column 8, lines 45-67; column 9, lines 1-4) and a statistics space controlled by said learning system controller (column 9, lines 21-32), wherein said set of rules describes how different classes recognized by said learning system are related to each other (column 17, lines 16-59)

However, *Amado* doesn't explicitly teach a belief model, coupled to said controller, comprising a set of beliefs and probabilities associated with each belief of said set of beliefs, wherein said belief model comprises a set of rules deduced from a learning

system, said learning system comprising truth data files for deducing said set of beliefs, probabilities and shadow objects, a learning system controller and a statistics space controlled by said learning system controller, wherein said set of rules describes how different classes recognized by said learning system are related to each other spatially and physically, a belief network, coupled to said controller or said relations subsystem is operative to determine temporal relations while *Mikurak* teaches,

- a controller (column 51, lines 13-20)

Lin et al teaches,

- a belief model, coupled to said controller (page 484, section 4.2), comprising a set of beliefs and probabilities associated with each belief of said set of beliefs (page 480, section 2, paragraph 2), wherein said belief model comprises a set of rules (page 481, section 3.3, paragraph 1), wherein said set of rules describes how different classes (page 486, Figs. 3-4) recognized are related to each other (page 482, section 4, paragraphs 1-2) spatially (page 483, section 4.1.3, Spatial relationship bullet) and physically (page 483, section 4.1.3, Initial Belief Assignment bullet; Figs. 1-2)

Ng et al teaches,

- a belief network, coupled to said controller (page 353, paragraph 3 and Fig. 1)

De Natale et al teaches,

- a system deducing (page II-487, right column, paragraphs 4—6; page II-488, left column, paragraph 1) shadow (page II-486, left column, paragraph 4) objects

Wang et al teaches,

- said relations subsystem is operative to determine temporal relations (page 120, section 1.3, paragraph 1)

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for providing a secure means for charging users based on information and/or resources actually used (*Mikurak*, column 205, lines 9-61), avoiding exhaustive enumeration of evidence combination (*Lin et al*, p. 484, section 6, paragraph 2), improving system performance (*Ng et al*, page 356, paragraph 4), processing and interpretation of underwater images (*De Natale et al,* Abstract, "This paper presents ... maximum fuzzy reliability") and taking into account multiple granularities while always preserving temporal functional dependencies (*Wang et al*, page 120, section 1.3, paragraph 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Amado* as taught by *Mikurak*, *Lin et al, Ng et al, De Natale et al* and *Wang et al* for the purpose of providing a secure means for charging users based on information and/or resources actually used, avoiding exhaustive enumeration of evidence combination, improving system performance, processing/interpretation of underwater images and preserving temporal functional dependencies.

Regarding claim 13:

The rejection of claim 13 is similar to that for claim 12 as recited above since the stated limitations of the claim are set forth in the references. Claim 13's limitations difference is taught in *Wang et al*:

- said temporal relations include types comprising at least one of: a before type, an after type (page 147, paragraph 4), and an exists with type

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Amado* in view of *Mikurak* in view of *Lin et al* in view of *Ng et al* in view of *De Natale et al* and in further view of *Golan* USPN 5,974,549 "Security monitor" (October 26, 1999).

Regarding claim 17:

Amado teaches,

- a blackboard (column 5, lines 7-31) comprising
- a plurality of experts (column 5, lines 32-57), and
- data comprising original input data and data created by processing of any of said plurality of experts (column 24, lines 14-23), and
- a controller operative to control said experts (column 77, lines 20-63);
- a relations subsystem (column 6, lines 60-67), coupled to said controller (column 25, lines 8-25)
- a model (column 10, lines 17-34; column 12, lines 47-54), coupled to said controller (column 25, lines 8-25; column 68, lines 20-38), comprising probabilities (column 13, lines 63-67; column 14, lines 1-8), wherein said model comprises a set of rules deduced from a learning system (column 21, lines 51-55), said learning system comprising truth (column 22, lines 25-28) data files (column 28, lines 18-54; column 54, lines 1-46) for deducing probabilities (column 13, lines 63-67; column 14, lines 1-8), a learning system controller (column 8, lines 45-67; column 9, lines 1-4) and a statistics space controlled

by said learning system controller (column 9, lines 21-32), wherein said set of rules describes how different classes recognized by said learning system are related to each other (column 17, lines 16-59)

- said learning system (column 21, lines 51-55) is operative to assist (column 65, lines 34-40) in integrating a new expert, said new expert being adapted (column 8, lines 56-67; column 9, lines 1-4) to create, encapsulate (column 12, lines 43-46) and compile (column 25, lines 1-20) said new expert; to add a function (column 67, lines 60-67) to said blackboard (column 5, lines 7-31); if output of said new expert is new, to add the output (column 63, lines 25-32) to said belief model (column 11, lines 16-22); and to add a blackboard rule (column 10, lines 55-65) to control when said new expert is to be executed (column 11, lines 32-47)

However, *Amado* doesn't explicitly teach a belief model, coupled to said controller, comprising a set of beliefs and probabilities associated with each belief of said set of beliefs, wherein said belief model comprises a set of rules deduced from a learning system, said learning system comprising truth data files for deducing said set of beliefs, probabilities and shadow objects, a learning system controller and a statistics space controlled by said learning system controller, wherein said set of rules describes how different classes recognized by said learning system are related to each other spatially and physically, a belief network, coupled to said controller or to add a stub function to said blackboard while *Mikurak* teaches,

- a controller (column 51, lines 13-20)

Lin et al teaches,

- a belief model, coupled to said controller (page 484, section 4.2), comprising a set of beliefs and probabilities associated with each belief of said set of beliefs (page 480, section 2, paragraph 2), wherein said belief model comprises a set of rules (page 481, section 3.3, paragraph 1), wherein said set of rules describes how different classes (page 486, Figs. 3-4) recognized are related to each other (page 482, section 4, paragraphs 1-2) spatially (page 483, section 4.1.3, Spatial relationship bullet) and physically (page 483, section 4.1.3, Initial Belief Assignment bullet; Figs. 1-2)

Ng et al teaches,

- a belief network, coupled to said controller (page 353, paragraph 3 and Fig. 1)

De Natale et al teaches,

- a system deducing (page II-487, right column, paragraphs 4—6; page II-488, left column, paragraph 1) shadow (page II-486, left column, paragraph 4) objects

Golan teaches,

- stub functions (column 12, lines 10-13)

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for providing a secure means for charging users based on information and/or resources actually used (*Mikurak*, column 205, lines 9-61), avoiding exhaustive enumeration of evidence combination (*Lin et al*, p. 484, section 6, paragraph 2), improving system performance (*Ng et al*, page 356, paragraph 4), processing and interpretation of underwater images (*De Natale et al,* Abstract, "This paper presents ... maximum fuzzy reliability") and redirecting function calls (*Golan*, column 3, lines 20-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made, to modify *Amado* as taught by *Mikurak*, *Lin et al, Ng et al, De Natale et al* and *Golan* for the purpose of providing a secure means for charging users based on information and/or resources actually used, avoiding exhaustive enumeration of evidence combination, improving system performance, processing/interpretation of underwater images and redirecting function calls.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Amado* in view of *Mikurak* in view of *Golan* in view of *Lin et al* and in further view of *De Natale et al*.

Regarding claim 23:

Amado teaches,

- creating an expert (column 25, lines 1-20);

- encapsulating said expert (column 12, lines 43-46);

- compiling said expert (column 10, lines 66-67; column 11, lines 1-9);

- adding a function to a blackboard (column 67, lines 60-67) ',

- determining if output of said expert is new and if new, then adding the output's (column 63, lines 25-32) class (Fig. 18; column 40, lines 16-26; column 97, lines 63-67; column 98, lines 1-15) to said blackboard (column 5, lines 7-57), and updating a model (column 10, lines 17-34; column 12, lines 47-54) by providing truth (column 22, lines 25-28) data file (column 44, lines 11-19) data to a learning system (column 21, lines 51-55)

- a learning system controller (column 8, lines 45-67; column 9, lines 1-4) and a statistics space controlled by said learning system controller (column 9, lines 21-32)

- creating a rule (column 10, lines 55-65) to control when said new expert is to be executed (column 11, lines 32-47) when supporting evidence (column 12, lines 47-54) is found to exceed an adaptable (column 8, lines 56-67; column 9, lines 1-4) threshold; However, *Amado* doesn't explicitly teach adding a stub function to a blackboard, updating a belief model, said learning system comprising truth data files for deducing beliefs, probabilities and shadow objects or deducing a set of rules from said learning system, said set of rules describing how different classes recognized by said learning system are related to each other spatially and physically while *Mikurak* teaches,

- a controller (column 51, lines 13-20)

Golan teaches,

- a stub function (column 12, lines 10-13)

Lin et al teaches,

- updating a belief model (page 484, section 4.2)

- a system comprising truth (p. 481, section 3.2) for beliefs and probabilities (page 480, section 2, paragraph 2)

- deducing a set of rules (page 481, section 3.3, paragraph 1), said set of rules describing how different classes (Figs. 3-4) recognized are related to each other (p. 482, section 4, paragraph 2) spatially (p. 483, section 4.1.3, Spatial relationship bullet) and physically (page 483, section 4.1.3, Initial Belief Assignment bullet; Figs. 1-2)

De Natale et al teaches,

- a system deducing (page II-487, right column, paragraphs 4—6; page II-488, left column, paragraph 1) shadow (page II-486, left column, paragraph 4) objects

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for providing a secure means for charging users based on information and/or resources actually used (*Mikurak*, column 205, lines 9-61), avoiding exhaustive enumeration of evidence combination (*Lin et al*, p. 484, section 6, paragraph 2), redirecting function calls (*Golan*, column 3, lines 20-33) and processing and interpretation of underwater images (*De Natale et al,* Abstract, "This paper presents ... maximum fuzzy reliability"). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Amado* as taught by *Mikurak*. *Golan, Lin et al* and *De Natale et al* for the purpose of providing a secure means for charging users based on information and/or resources actually used, avoiding exhaustive enumeration of evidence combination, redirecting function calls and processing/interpretation of underwater images.

RESPONSE TO APPLICANTS' AMENDMENT REMARKS

Claim Rejections - 35 USC § 103

Applicants argue that *Amado* USPN 5,701,400 fails to teach a blackboard comprising a plurality of experts where "experts can be any kind of processing" (Amendment REMARKS page 9, paragraph 2), a controller operative to control the experts (page 9, last paragraph and page 10, paragraph 1) or a relations subsystem coupled to the controller (page 10, paragraph 2). Applicant's arguments have been fully considered, but are moot in view of new grounds of rejection.

The examiner agrees with applicant's "any kind of processing" definition for experts controlled by a controller as supported by page 17, line 3 through page 19, line 7 in the specification and in the art by column 51, lines 13-20 of *Mikurak* USPN 6,671,818 ("... computer programs represent controllers ...") for the purpose of "... providing a secure means for charging users based on information and/or resources actually used ..." (column 205, lines 9-61). However, *Amado* is cited individually and in combination for explicitly and inherently disclosing the immediately preceding subject matter argued in the claims by the applicants:

- "The GBB for Windows™ expert system building tool ... provides a generic Blackboard-Based development framework for AI applications ... The M.4™ expert systems building tool ... The Nexpert Object™ for Windows expert system building tool ... It would be very complicated to program to do a function equivalent to the claimed invention (automatically creating an integral database of diagnostics that can be queried simultaneously and in a synchronized manner with the original data) using any of the expert systems, expert system building tools or neural network building tools in the prior art. ..." (column 5, lines 7-57),
- "Following the same principles described in the previous paragraphs, the invention may control more extensive changes to other programs' interfaces, according to the diagnostics and priorities identified. In this way, business programs could immediately execute showing only the options applicable to the situation at hand. ..." (column 77, lines 20-63) and

- "... In order for a neural network to learn, it must first receive a lot of sets of input and output variables so as to discover the relationship between them. ..." (column 6, lines 60-67) and "... any capable user can very quickly develop sets of linked and even recursive logical tests and associated messages, in essence knowledge or expert systems, using the development tools provided in the invention. ..." (column 25, lines 8-25),

respectively.

Applicant argues that *Lin et al* "Dempster-Shafer Reasoning for Medical Image Recognition" does not disclose or teach a blackboard comprising a plurality of experts (Amendment REMARKS page 10, paragraph 4), a belief model comprising a set of beliefs and probabilities associated with each belief of said set of beliefs wherein said belief model comprises a set of rules deduced from a learning system (Amendment REMARKS page 11, paragraph 3) or a learning system comprising truth data files for deducing said set of beliefs, probabilities and **shadow objects** (Amendment REMARKS page 12, paragraph 1). Applicant's arguments have been fully considered, but are moot in view of **new grounds of rejection**.

The examiner agrees that *Lin et al* does not disclose a learning system comprising truth data files for deducing said set of *beliefs*, probabilities and shadow objects. However, *Amado* and ***De Natale et al*** "Interpretation of underwater scene data acquired by a 3-D acoustic camera" are cited individually and in combination with *Lin et al* for explicitly and inherently disclosing the immediately preceding subject matter argued in the claims by the applicants:

- *Amado* - "The GBB for Windows™ expert system building tool ... provides a generic Blackboard-Based development framework for AI applications ... The M.4™ expert systems building tool ... The Nexpert Object™ for Windows expert system building tool ... It would be very complicated to program to do a function equivalent to the claimed invention (automatically creating an integral database of diagnostics that can be queried simultaneously and in a synchronized manner with the original data) using any of the expert systems, expert system building tools or neural network building tools in the prior art. ..." (column 5, lines 7-57),

- *Amado* - "KADS Tool is a software tool that models cycles of complex activities and automatically generates the specifications of applications for decision-making systems, diagnosis, planning, design, and process control. ... that standardizes modeling techniques and expertise and generates reusable models in a language-independent manner ..." (column 10, lines 17-34), "11. Referring to KNOWLEDGE ACQUISITION AND AUTOMATIC DISCOVERY TOOLS SUCH AS DATABASE MINERS, knowledge acquisition tools, also called knowledge extraction tools and, sometimes, database miners, perform various forms of statistical, mathematical and probabilistic analysis on whole databases. ... they generate a set of rules representing those correlations" (column 13, lines 63-67; column 14, lines 1-8), "... it's important to state that THE INVENTION CAN LEARN AND IT CAN BE AUTONOMOUS. ..." (column 21, lines 51-55), "The XFuzzy™ object-oriented database system add-on ... Allows user to create rule-based systems using fuzzy logic and applied fuzzy set theory. Combines

evidence from several rules. Allows continuously graded levels of certainty to be considered. Supports machine teaming, allowing sets of rules to be learned from training data and simulated problem models" (column 12, lines 47-54), and "The invention can also learn using the same mechanisms as a CLASSIFIER SYSTEM (a single and simple set of rules codified in DNA-like text strings, genetic procedure to reproduce rules), but operating with databases. Classifier systems are a kind of rule-based systems with general mechanisms for processing rules in parallel, for adaptive generation of new rules, and for testing the effectiveness of existing rules. Classifier systems provide a framework in which a population of rules encoded as bit strings evolves on the basis of intermittently given stimuli and reinforcement from its environment. ... A classifier system consists of the following components: ... rule system (population of classifiers), ... and genetic procedure (reproduction of classifiers)" (column 68, lines 20-38)

Lin et al - "... The belief of the hypothesis is obtained by evaluating the evidence within the framework of the multivariate belief function model" (page 484, section 4.2), " ... beliefs can be propagated among the compatible frames by extending or marginalizing belief functions. In both cases, beliefs are propagated from one frame to another based on the logical relationship of the frames ... Let ... denote the basic probability assignments ... The following equations describe the relationship between ordinary and minimal extension belief functions ..." (page 480, section 2, paragraph 2), "Evidence propagation refers to the aggregation of

the uncertainty associated with the antecedents of the rules as well as the uncertainty associated with the rule itself to deduce the uncertainty associated with the conclusion of the rule" (page 481, section 3.3, paragraph 1), "... X-ray CT classification distributions ..." (page 486, Figs. 3-4), "Given a set of three correlated images acquired from x-ray CT (Computed Tomography), T_1-, and T_2-weighted MRI (Magnetic Resonance Imaging) of a human brain, the system is expected to recognize the major anatomical structures in the image set based on (1) knowledge about the characteristics of sensors, (2) knowledge about the anatomical structures, and (3) knowledge about the image processing and analysis tools. The proposed Medical Image Recognition System (MIRS) consists of three phases. In phase one, entities in the form of regions and curves are extracted from the images ... features of these entities are computed. The second and third phases aim at recognizing the physically meaningful entities in the image. In phase two, the system tries to identify major anatomies and locate the slice in the model (see Fig. 2) that is most similar to the image set under study. In phase three, the selected model slice is used to refine the recognized anatomic structures and extract gray and white matters in the image. ... The blackboard architecture [15] is selected as the framework to implement these complicated processes. A blackboard model is composed of three major components: knowledge sources, blackboard data structure and control" (page 482, section 4, paragraphs 1-2), "Spatial relationship. A set of rules that characterizes the spatial relationships among these anatomical structures

projected to horizontal plane is predefined. The rules are further transformed to the corresponding multivariate belief functions for guiding the recognition process. ..." (page 483, section 4.1.3, Spatial relationship bullet) and "Initial Belief Assignment. To evaluate the mapping from a region to possible high-level anatomical structures ... we construct a set of analyzers which provide the beliefs by examining the features of a given region against the feature distributions of the corresponding anatomical structure in the knowledge base. Each analyzer that evaluates one of the features ... intensity, location, orientation, h-v ratio, minimum bounding rectangle ... where ... denotes the conditional probability function ..." (page 483, section 4.1.3, Initial Belief Assignment bullet)

De Natale et al - "While searching for the various subparts ... it provides the Data-Analyzer with various informations: the area in which to search for a subpart, the name of the subpart searched for, the list of necessary parts ... The area is deduced from the relationships (defined in the knowledge-base) between the subparts to be searched for and the already found subparts. In a subsequent phase, such relationships are computed more accurately in order to evaluate the global relational consistency of the subparts, and hence to verify the hypothesis previously made. The Data-Analyzer's response may inform that ... the relationships among the already identified model subparts are not verified by the relationships associated with such subparts in the hypothesis made ..." (page II-487, right column, paragraphs 4—6; page II-488, left column, paragraph 1) and

"The primary task of low-level algorithms implemented is the detection of the most interesting areas in a scene, so as to restrict the range of areas to be processed by the following, more time-consuming, recognition steps. Then the algorithms extract the 2-D sections of the areas that are most likely to be associated with the objects present in a scene, and evaluate some features of such areas" (page II-486, left column, paragraph 4) and

- *Amado* - "It should be noted that the degree of certainty about the truth of a known fact is also an important concept and some way of dealing with uncertainty MUST be provided" (column 22, lines 25-28) and "The most flexible, easy to implement, configurable and practical implementation of multidimensionality in the invention is then the usage of database views, and the conversion of these views to database files. MORE THAN ONE DATA VIEW ... (Here, each application contains one data.dbf database file and one diagnostics database.) These applications can interact in a very simple way: the invention's logical tests allow comparing data items from different applications. ... In order to do this, it's only necessary to specify the full path (disk and directory) containing the corresponding applications (since each application is a group of files stored in one separate directory). In a similar way, the invention's expert tests allow evaluating the existence of diagnostics in different applications. ... MORE THAN ONE DATA CODE As it has been described in this document, the invention uses only one pointer (code) field in the data database (data.dbf) file. ... This code field should really be interpreted as more than one field. Matter of fact, our products'

current implementations--at the time of filing this application--still have the same structure for all application's files, but they have just been upgraded to three or more codes in the data.dbf files"(column 28, lines 18-54), "There are twenty six essential DBF files for each application, and they may be organized in five conceptual groups, as shown in FIG. 67: (I) QUANTITATIVE DATA, (II) DATA TESTS, DIAGNOSTICS, AND ACTION CATEGORIES, (III) EXPERT TESTS AND DIAGNOSTICS, (IV) MEMORANDUMS, (V) EXECUTIVE INFORMATION SYSTEM The three files in the first conceptual group (QUANTITATIVE DATA) contain the actual data items ... data groups are quite useful in order to later reduce the number of formulas (using data groups, thousands of effective tests may be run with just two or three test definitions). The seven files in the second conceptual group (DATA TESTS, DIAGNOSTICS AND ACTION CATEGORIES) contain the logical formulas to be applied on the data and on those diagnostics already on the diagnostics database. These files also contain information on the meaning of action categories (priorities, people responsible, actions to be taken, etc.) when particular tests turn TRUE. Yet other files contain the actual messages associated to each particular test. In this way, when a test turns TRUE and an associated diagnostic is stored in the diagnostics database, and when later the associated diagnostic is queried, an intelligent query system will also show the message associated with the test associated to that particular diagnostic. The six files in the third conceptual group (EXPERT TESTS AND DIAGNOSTICS). Expert tests may also be called super-tests and expert

diagnostics may also be called super-diagnostics. The invention first performs logical tests on the data. It then writes the associated diagnostics for those tests that turn TRUE. Then, the invention performs logical super-tests (or expert tests) on those diagnostics stored in the diagnostics database" (column 54, lines 1-46), respectively.

Applicant argues that *Ng et al* "Consensus in a multi-expert system" does not teach a belief model, coupled to said controller, comprising a set of beliefs and probabilities associated with each belief of said set of beliefs, wherein said belief model comprises a set of rules deduced from a learning system, said learning system comprising truth data files for deducing said set of beliefs, probabilities and shadow objects, a learning system controller and a statistics space controlled by said learning system controller, wherein said set of rules describes how different classes recognized by said learning system are related to each other spatially and physically (Amendment REMARKS page 12, paragraph 3) or a relations subsystem coupled to the controller (Amendment REMARKS page 13, paragraph 1). Applicant's arguments have been fully considered, but are moot in view of the above new grounds of rejection.

The examiner agrees that *Ng et al* does not disclose the immediately preceding subject matter argued in the claims by the applicants because page 353, paragraph 3 and Fig. 1 of *Ng et al* was cited individually and in combination with *Amado* for explicitly and inherently disclosing the belief network, coupled to said controller limitation of the claims. Furthermore, the purpose and motivation for modifying *Amado* as taught by *Mikurak, Lin et al, Ng et al* and *De Natale et al* include providing a secure means for

charging users based on information and/or resources actually used (*Mikurak*, column 205, lines 9-61), avoiding exhaustive enumeration of evidence combination (*Lin et al*, p. 484, section 6, paragraph 2), improving system performance (*Ng et al*, page 356, paragraph 4) and processing and interpretation of underwater images (*De Natale et al,* Abstract, "This paper presents ... maximum fuzzy reliability").

As set forth above with regards to *Amado, Mikurak, Lin et al, Ng et al* and *De Natale et al*, the items listed explicitly and inherently teach each element of the applicants' claimed limitations. Applicants have not set forth any distinction or offered any dispute between the claims of the subject application, *Amado's* Method and apparatus for applying if-then-else rules to data sets in a relational data base and generating from the results of application of said rules a database of diagnostics linked to said data sets to aid executive analysis of financial data, *Mikurak's* Problem isolation through translating and filtering events into a standard object format in a network based supply chain, *Lin et al's* Dempster-Shafer Reasoning for Medical Image Recognition, *Ng et al's* Consensus in a multi-expert system and *De Natale et al's* Interpretation of underwater scene data acquired by a 3-D acoustic camera.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Non-initialed and/or non-dated alterations have been made to the oath or declaration The correction to the city of Inventor Hood's address on page 2 is not initialed or dated. See 37 CFR 1.52(c).

Information Disclosure Statement (IDS) and Specification Objections

The listing of references in the specification is not a proper IDS. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The specification is objected to because references "incorporated herein by reference in their entireties" (Specification, page 49, line 5) have not been made of record in the case or supplied with an IDS. With the possible **misspellings** on page 49, line 2 ("The Computational Complexity of Probabilistic Inference Using Bayesian Belief Networks" by **J.** Cooper vs. Gregory F. Cooper suggested by http://wotan.liu.edu/docis/dbl/aintel/1990_42_2_3_393_TCCOPI.htm) and on page 49, line 1 ("Probabilistic Reasoning **for** Intelligent Systems" by J. Pearls vs. "Probabilistic Reasoning in Intelligent Systems" suggested on page 15 between the R-118 and R-117 bullets of http://bayes.cs.ucla.edu/jp_home.html), the examiner must reassert the objections to the specification in the Office Action mailed 11/6/03 covering four references not included in an IDS:

- The Judea Pearl reference of page 23, lines 8-9, page 48, line 23 and page 49, lines 1-2.

- The Neopolitan reference of page 24, lines 18-19 and page 49, lines 3-4.
- The Cooper reference of page 24, lines 22-23, page 25, line 1 and page 49, lines 2-3.
- The Jagannathan reference of page 48, lines 22-23.

Conclusion

The following prior art made of record is considered pertinent to applicant's disclosure:

- *Kindo et al;* USPN 5448502 A; Devices for judging image on the basis of gray world assumption, discriminating color chart, deducing light source and regulating color

- *Tsukamoto et al;* A methodological approach on real-time gesture recognition using multiple silhouette models; Proceedings 4th IEEE International Workshop on Robot and Human Communication; 5-7 July 1995; pp 123-128

- *Pearl;* Decision making under uncertainty; ACM Computing Surveys; Vol. 28, Is. 1; March 1996; pp 89-92

- *Elliott et al*; "Fault Finder"; Proceedings of the 1990 ACM SIGSMALL/PC symposium on Small systems; February 1990; pp 13-23

- *Neapolitan*; Is higher-order uncertainty needed?; IEEE Transactions on Systems, Man and Cybernetics Part A; Vol. 26, Is. 3; May 1996; pp 294-302

- *Watson*; Blackboard Architectures and Applications review; SIGART Bulletin, Vol. 1, No. 3; pp 19-20; http://delivery.acm.org/10.1145/1060000/1056294/p19-watson.pdf?key1=1056294&key2=3510618111&coll=GUIDE&dl=GUIDE&CFID=46756301&CFTOKEN=38049324

- *Pearl*; Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference; Morgan Kaufman; 1988; pp vii-xix

- *Jagannathan et al*; Blackboard Architecture and Applications; Academic Press, Inc.; 1989; pp vii-xvii

- *Neapolitan*; Probabilistic Reasoning in Expert Systems Theory and Algorithms; John Wiley & Sons; 1990; pp vii-xiii

- *Cooper*; The computational Complexity of Probabilistic Inference Using Bayesian Belief Networks; Artificial Intelligence; Vol. 42, Is. 2-3; March 1990; pp 393-405

- *Spiegelhalter*; Probabilistic Reasoning in Expert Systems; American Journal of Mathematical and Management Sciences; Vol. 9, Is. 3-4; 1991; pp 191-210

Any inquiry concerning this communication or earlier communications from the Office should be directed to Meltin Bell whose telephone number is 571-272-3680. This Examiner can normally be reached on Mon - Fri 7:30 am - 4:00 pm.

If attempts to reach this Examiner by telephone are unsuccessful, his supervisor, Anthony Knight, can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MB
June 12, 2005

Anthony Knight
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